Farmers' understandings of genetically modified crops within local communities

Other

Executive summary

The Open University

Farmers' Understandings of Genetically Modified Crops within Local Communities

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Executive summary

The prospect of the commercial production of genetically modified (GM) crops in the UK has been hugely controversial. At the outset of this study, in 2004, the UK Government was about to decide whether or not to allow commercial production to go ahead, after three years of intensive evidence gathering, including public debates and large-scale on-farm trials (the Farm Scale Evaluations or FSEs).

Our study investigated an important but neglected aspect of that debate – the view of the farmers, the people who are ultimately responsible for decisions about adopting and managing new technologies such as GM crops. We wanted to know: what did they think about new technologies such as GM crops? If they had taken part in the FSEs, how practical had they found the crop management guidelines they were required to follow? And, in their farming decisions about new technologies, who did they rely on for support and advice, and how might that support be improved? We interviewed farmers with experience of growing GM crops in the FSEs, and a similar group of farmers without that experience. All the farmers were growing commodity crops on a large scale.

We found that the farmers in our study view GM crops much as they would any other promising new technologies, to be assessed on their merits in the light of their own farming context and experience. They see GM technology simply as an advance in plant breeding techniques rather than as a completely novel technology. All the farmers we spoke to, whether or not they had participated in the FSEs, believe that GM crops offer clear economic and environmental benefits to themselves and to the wider public. They see new technologies such as GM crops as a way of reconciling the often conflicting policy demands made of them, to deliver high quality products at low cost whilst farming in an environmentally and socially responsible way. They anticipate that, in future, GM crops will help tackle problems associated with climate change, for example by providing biofuels and plants that are drought tolerant.

The farmers who had taken part in the FSEs said they had no problems in following the management guidelines they were given. However, some farmers were annoyed at the way the final results of the trials were presented by the scientists. They did not think their practices were represented fairly, since in the trials they were required to apply a high dose of herbicide, resulting in a weed-free crop, whereas normally they would use lower doses and tolerate some weeds provided that crop yields were not affected. Thus their own knowledge and experience led them to believe that the effect of GM crops on biodiversity was not a significant issue.

On the question of support, we found that farmers, although often geographically isolated, interact with a large number of individuals and organizations. For FSE

farmers, growing GM crops has meant more interaction with farming and non-farming neighbours, but these members of their local community are not viewed as influencing farm decisions. Instead, farmers gather information on which to base their decisions partly by experimenting, that is, by using their own knowledge and experience in their own setting to develop new technologies in practice, and partly by drawing on and exchanging information with a range of people in their wider farming networks.

The following sections provide information on our research approach, our findings on the people and organizations who influence farmers, the framework used for our analysis, and the policy implications of our findings.

Our research approach

To ensure that our findings were relevant to users, and grounded in farmers' actual experiences and everyday practice, we used an increasingly participatory research approach with participants. Over the three phases of our research (see project diagram, inside back cover) we used three different, and progressively more interactive, ways to engage with participants, building up relationships as the research progressed and providing frequent opportunities for our research participants to comment on what we were doing.

Each phase involved the use of interactive mapping techniques to capture and represent the main findings in a holistic manner. So in Phase 1, when we interviewed farmers about their views on GM crops and other new technologies, we used cognitive maps to summarise the connections and linkages in their thinking. In Phase 2, we first discussed those maps with the farmers, adding any changes they suggested. We then worked with each farmer to build up a map showing the influences on their farm decisions on circular grid, with their more important influences placed closest to the centre (see Figure1). In Phase 3, when we invited

Figure 1 Drawing up a map of farmer influencers

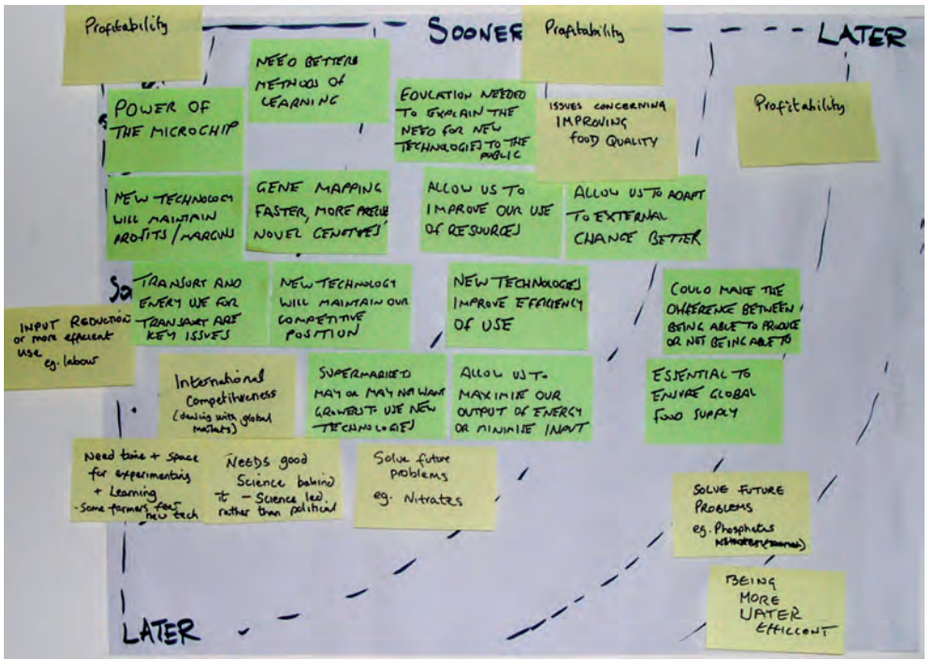

Figure 2 An example of one group's summary Harman Fan

farmers and some of the key people who influence their decisions to a workshop, we used a mapping device called a 'Harman Fan' to explore ways of supporting farmers learn about, select and implement new technologies that could benefit their farm business (see Figure 2). More details can be found in the reports for each phase of the study [1-3], available on our web site.

Farmers' influencers

As already mentioned, we found that the people and organizations who influence farmers tend to be widely distributed rather than local to their farm. They include other farmers, government, scientists, and supermarkets. Often it is individuals within organizations, rather than the organizations themselves, who are important influences. Not all the influences are seen as positive. Some influences are one-way (for example, regulations that impose restrictions on what can be done), while others take the form of a two-way negotiation (for example, discussions with agricultural advisers on agronomic matters).

Although the farmers in the study felt they had good relations with other farmers, the adoption of new technologies such as GM crops will require closer co-operation with neighbouring farmers than previously if discord is to be avoided. Some farmers included solicitors on their influence maps in connection with new technology, in case they needed legal advice if faced with litigation.

The government department responsible for agriculture, Defra (Department for Environment, Food and Rural Affairs), was seen as extremely influential on farm decisions, but through the imposition of regulations rather than the provision of helpful advice. Farmers were frustrated by the unrealistic expectations and mass of information directed at them, the conflicting policy signals, the short time-scale of policy changes, and the lack of understanding of farming practice on the part of government.

Farmers wanted trustworthy and independent information and advice, backed up by robust science about new developments. For this they turned to public sector research establishments, and particularly to trusted scientists. They found that research is not necessarily set up to provide farmers with the support they need at a practical level. Scientists don't necessarily understand the day-to-day practice of farming, and there is little direct engagement with farmers over the design and reporting of trials. Where once there was co-ordinated support, strongly oriented to farmers' needs, now it is up to the individual farmer to seek it out and decide its relevance, at a time when the complexity of agriculture is increasing.

In addition to their need to run a profitable business, farmers face expectations that they will deliver an attractive landscape, a countryside rich in biodiversity and cheap, good quality, healthy food. Farmers see supermarkets as an increasingly important influence on farm decision making. They see the lack of connectivity between farming and the consumer, and the need to improve the image of farming, and particularly of GM crops, as key issues. They are concerned about the increasing influence of the environmental lobby on policy, and the lack of a countervailing force in the farming industry.

Framework for the analysis

To analyse our findings in relation to the support farmers need to adopt new technologies, we used ideas about situated learning[4], communities of practice[5], and networks of practice[6].

The theories on situated learning move away from the idea of the individual as a learner who internalises knowledge 'transmitted' or discovered though interactions with others, to learning as participation in the social world, that is, away from theories involving cognitive processes to those involving social practice.

Communities of practice are informal groups of people who share a common activity or concern. Members form a common identity through their shared interests, history and interactions. Such communities are informal and self-managing. Networks of practice have all the properties of a community of practice but are more loosely connected. We characterized farmers as a network of practice, because they have no strong organizational network to link the many highly distributed members. We described the people and groups who influence farmers, but who are not part of their network of practice, as their 'community of influencers'.

Most farmers have to act individually at the boundary between their network of practice and community of influencers in order to find and exchange information and knowledge. There is a lack of official people working at the boundary to undertake this role of 'broker' for them, for example to link the research in the agricultural science community and agricultural policy development in government departments with the day-to-day agricultural practices and long-term plans of farmers.

Policy implications

From a synthesis of all three phases of our research, we conclude that there is a need for:

- An enabling environment that is responsive to farmers' needs, with clear, consistent and long-term policy signals about the future of agriculture, to allow them time to adapt to changing demands.
- Improved connections between farmers and consumers, through initiatives such as improved marketing, and to inform consumers about how and where their food is produced.
- Greater awareness amongst policy makers, regulators, scientists and the supermarkets, of the practicalities of farming – of what farmers can and cannot do.
- Independent, trustworthy, sources of research and advice for farmers.
- The valuing of farmers' informal and experiential learning, for example in the shaping of agricultural research.

The following features are among those that would most improve the systems of support available to farmers in their decisions about new technologies:

- Horizon-scanning on behalf of farmers, to synthesise information, look at the potential of new technologies, and develop clear long-term directions for agriculture.
- Government sponsored intermediaries qualified in and knowledgeable about agriculture, to improve the links between government policies, scientific research and the grassroots.

References

1 Oreszczyn, S. (2005) What farmers' say about new technologies and GM crops: A report on the initial telephone interviews. The Open University, Milton Keynes.

2 Oreszczyn, S. (2006) What farmers say about influences on their decisions about farming, new technologies and GM crops: a report on the farm visits. The Open University, Milton Keynes.

3 Oreszczyn, S. Lane, A.B. and Carr, S. (2007) New technologies and scientific developments: Exploring better ways to support farmers' decisions. The Open University Milton Keynes.

4 Lave, J. and Wenger, E. 1991. *Situated Learning: Legitimate peripheral learning.* Cambridge University Press, Cambridge.

5 Wenger, E., 1998. *Communities of Practice, Learning, Meaning, and Identity.* Cambridge University Press, New York.

6 Brown, J. S. and Duguid, P. 2001. Knowledge and organization: a social-practice perspective. *Organization Science* 12, 198-213.

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Project diagram